Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Withdrawn) A method for compressing image chroma information of a color video image in a video image compression system, including selecting a resolution for a red color component of the color video image that is higher than the resolution for a blue color component of the color video image.

2. (Withdrawn) A method for compressing image chroma information of a color video image in a video image compression system, including:

(a) downfiltering a blue color component of the color video image to a processed blue color component having a first resolution along at least one of the horizontal and vertical image axes of the color video image; and

(b) filtering a red color component of the color video image to a processed red color component having a second resolution higher than the first resolution.

3. (Withdrawn) The method of claim 2, wherein the second resolution is in the range from 0.5 to 1.0 of the full resolution of the red color component along at least one of the horizontal and vertical image axes of the color video image.

4. (Withdrawn) The method of claim 2, further including compressing at least the processed blue color and red color components to a compressed output image.

5. (Withdrawn) The method of claim 4, further including decompressing the compressed output image to obtain uncompressed processed blue and red color components.

6. (Withdrawn) The method of claim 5, further including upsize filtering the processed blue and red color components to the full resolution of the color video image.

7. (Withdrawn) The method of claims 1 or 2, wherein the video image compression system is a motion-compensated video image compression system.

8. (Currently Amended) A method for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including:

utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size;

utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock; and

utilizing a second QP value for at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, ~~independent of hue of said at least one color channel~~, and wherein the relationship comprises a property that the second QP value for said first macroblock is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has finer quantization

resolution than the Y luminance channel for said first macroblock.

9. (Currently Amended) A method for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including:

utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size;

utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock; and

utilizing a second QP value for at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, wherein the relationship comprises a property that the second QP value for said first macroblock is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock, and

wherein for said relationship, the second QP value is determined by applying a bias value to the first QP value.

10. (Currently Amended) A method for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including:

utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size;

utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock;

utilizing a second QP value for at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, and wherein the relationship comprises a property that the second QP value for said first macroblock is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;

applying the first and second QP values; and

compressing the color video image, after application of the first and second QP values, to a compressed output image.

11. (Original) The method of claim 10, further including decompressing the compressed output image using the first and second QP values to obtain an uncompressed video image.

12. (Currently Amended) A method comprising:

in a YUV video image compression system, utilizing macroblocks and quantization parameters during compression, a variable quantization step size and a quantization parameter (QP) representing a size of a step, where an increase in QP corresponds to a larger quantization step size;

selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for ~~all hues of~~ at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said

second QP value is dependent only upon a first relationship to the first QP value, and wherein the first relationship comprises a property that ~~wherein for said first macroblock,~~ the second QP value is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has ~~greater~~ finer quantization resolution than the Y luminance channel for said first macroblock ~~all hues~~; and

in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for ~~all hues of~~ said at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a property that ~~wherein for said first macroblock,~~ the second QP value is ~~greater~~ higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock ~~all hues~~.

13. (Currently Amended) A method comprising:

in a YUV video image compression system, utilizing macroblocks and quantization parameters during compression, a variable quantization step size and a quantization parameter (QP) representing a size of a step, where an increase in QP corresponds to a larger quantization step size;

selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, wherein the first relationship comprises a property that ~~wherein for said first macroblock,~~ the second QP value is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has ~~greater~~ finer quantization resolution than the Y luminance channel for said first macroblock; ~~and wherein the second QP value~~

~~is determined by applying a bias value to the first QP value;~~ and

in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for said at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, wherein the second relationship comprises a property that ~~wherein for said first macroblock, the~~ the second QP value is ~~greater~~ higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock, and

wherein for at least one of said relationships, the second QP value is determined by applying a bias value to the first QP value.

14. (Currently Amended) A method comprising:

in a YUV video image compression system, utilizing macroblocks and quantization parameters during compression, a variable quantization step size and a quantization parameter (QP) representing a size of a step, where an increase in QP corresponds to a larger quantization step size;

selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, and wherein the first relationship comprises a property that ~~wherein for said first macroblock,~~ the second QP value is ~~less~~ lower than the first QP value so that said at least one of the U and V color channels has ~~greater~~ finer quantization resolution than the Y luminance channel for said first macroblock;

in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for said at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a property that ~~wherein for said first macroblock,~~ the second QP value is ~~greater~~ higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock;

applying the first and second QP values; and

compressing the color video image, after application of the first and second QP values, to a compressed output image.

15. (Original) The method of claim 14, further including decompressing the compressed output image using the first and second QP values to obtain an uncompressed video image.

16. (Withdrawn) A method for improving the coding efficiency for a color space representation of a video image

originally represented as linear RGB pixel values in a video image compression system, including transforming the linear RGB pixel values of the video image to a logarithmic representation of luminance and chroma channel information.

17. (Withdrawn) The method of claim 16, wherein transforming includes applying the following equations to obtain a YUV logarithmic representation of the video image:

$$Ylog = Log (Wr * R + Wg * G + Wb * B)$$

$$U \text{ chroma channel} = Log(R) - Ylog$$

$$V \text{ chroma channel} = Log(B) - Ylog$$

where Wr, Wg, and Wb are linear weightings for red, green, and blue components of luminance of the video image.

18. (Withdrawn) The method of claim 17, further including reducing the resolution of the U and V chroma channels of the YUV logarithmic representation.

19. (Withdrawn) The method of claim 17, further including compressing the YUV logarithmic representation of the video image to a compressed video image.

20. (Withdrawn) The method of claim 19, further including decompressing the compressed video image to a restored YUV logarithmic representation of the video image.

21. (Withdrawn) The method of claim 20, further including transforming restored YUV logarithmic representation of the video image to linear RGB pixel values.

22. (Withdrawn) The method of claim 21, wherein transforming includes applying the following equations to obtain the linear RGB pixel values:

R= anti-log(Y + U)

B= anti-log(Y + V)

G=(anti-log(Y) - Wr * R - Wb * B) / Wg.

23. (Withdrawn) A method for improving the video characteristics of a color video image in a video compression system, including:

(a) selecting a set of image channels to represent the color video image, including a luminance channel and n chroma channels, where n is at least three; and

(b) compressing the luminance channel and the n additional chroma channels to a compressed video image.

24. (Withdrawn) The method of claim 23, wherein at least one chroma channel represents non-visible wavelengths.

25. (Withdrawn) The method of claim 23, wherein the luminance channel is the image channel having the highest dynamic range and resolution.

26. (Withdrawn) The method of claim 23, further including coding each chroma channel independently from each other channel.

27. (Withdrawn) The method of claim 23, further including coding each chroma channel differentially with respect to a selected other channel.

28. (Withdrawn) The method of claim 23, further including reducing the resolution of at least one chroma channel.

29. (Withdrawn) The method of claim 23, further including applying a quantization parameter (QP) value to at least one chroma channel biased with respect to a QP value applied to the luminance channel.

30. (Withdrawn) A computer program, stored on a computer-readable medium, for compressing image chroma information of a color video image in a video image compression system, the computer program comprising instructions for causing a computer to permit selection of a resolution for a red color component of the color video image that is higher than the resolution for a blue color component of the color video image.

31. (Withdrawn) A computer program, stored on a computer-readable medium, for compressing image chroma information of a color video image in a video image compression system, the computer program comprising instructions for causing a computer to:

(a) downfilter a blue color component of the color video image to a processed blue color component having a first resolution along at least one of the horizontal and vertical image axes of the color video image; and

(b) filter a red color component of the color video image to a processed red color component having a second resolution higher than the first resolution.

32. (Withdrawn) The computer program of claim 31, wherein the second resolution is in the range from 0.5 to 1.0 of the full resolution of the red color component along at least one of the horizontal and vertical image axes of the color video image.

33. (Withdrawn) The computer program of claim 31, further including instructions for causing the computer to compress at least the processed blue color and red color components to a compressed output image.

34. (Withdrawn) The computer program of claim 33, further including instructions for causing a decompression computer to decompress the compressed output image to obtain uncompressed processed blue and red color components.

35. (Withdrawn) The computer program of claim 34, further including instructions for causing the decompression computer to upsize filter the processed blue and red color components to the full resolution of the color video image.

36. (Withdrawn) The computer program of claims 30 or 31, wherein the video image compression system is a motion-compensated video image compression system.

37. (Currently Amended) A computer program, stored on a computer-readable medium, for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size, the computer program comprising instructions for causing a computer to:

utilize a first QP value for a Y luminance channel of the color video image for a first macroblock; and

utilize a second QP value for ~~all hues of~~ at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, and wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock~~and wherein the second QP value for said first macroblock is less than the first QP value so that all hues of said at least one of the U and V~~

~~color channels has finer quantization resolution than the Y luminance channel for said first macroblock~~.

38. (Currently Amended) A computer program, stored on a computer-readable medium, for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size, the computer program comprising instructions for causing a computer to:

utilize a first QP value for a Y luminance channel of the color video image for a first macroblock; and

utilize a second QP value for at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock, ~~wherein the second QP value for said first macroblock is less than the first QP value so~~

~~that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock,~~ and

wherein for said relationship, the second QP value is determined by applying a bias value to the first QP value.

39. (Currently Amended) A computer program, stored on a computer-readable medium, for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, including utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in the QP corresponds to a larger quantization step size, the computer program comprising instructions for causing a computer to:

utilize a first QP value for a Y luminance channel of the color video image for a first macroblock;

utilize a second QP value for at least one of U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, and wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color

channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~and wherein the second QP value for said first macroblock is less than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;~~

apply the first and second QP values; and

compress the color video image, after application of the first and second QP values, to a compressed output image.

40. (Previously Presented) The computer program of claim 39, further including instructions for causing a computer to decompress the compressed output image using the first and second QP values to obtain an uncompressed video image.

41. (Currently Amended) A computer program, stored on a computer-readable medium, including instructions operative to cause a computer to:

in a YUV video image compression system, utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step, where an increase in QP corresponds to a larger quantization step size;

select at least one of reducing chroma noise during compression of a color video image and achieve higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilize a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilize a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for all hues of said first macroblock, the second QP value is less than the first QP value so that all hues of said at least one of the U and V color channels has greater quantization resolution than the Y luminance channel;~~ and

in response to selecting achieving higher compression,

utilize the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilize the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock.~~wherein for all hues of said first macroblock, the second QP value is greater than the first QP value so that all hues of said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel.~~

42. (Currently Amended) A computer program, stored on a computer-readable medium, including instructions operative to cause a computer to:

in a YUV video image compression system, utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step, where an increase in QP corresponds to a larger quantization step size;

select at least one of reducing chroma noise during compression of a color video image and achieve higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilize a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilize a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;~~wherein for said first macroblock, the second QP value is less than the first QP value so that said at least one of the U and V color channels has greater quantization resolution than the Y luminance channel, and wherein the second QP value is determined by applying a bias value to the first QP value;~~ and

in response to selecting achieving higher compression,

utilize the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilize the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, wherein the second relationship comprises a property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock, ~~wherein for said first macroblock, the second QP value is greater than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel,~~ and

wherein for at least one of said relationships, the second QP value is determined by applying a bias value to the first QP value.

43. (Currently Amended) A computer program, stored on a computer-readable medium, including instructions operative to cause a computer to:

in a YUV video image compression system, utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step, where an increase in QP corresponds to a larger quantization step size;

select at least one of reducing chroma noise during compression of a color video image and achieve higher compression during compression of the color video image;

in response to selecting reducing chroma noise,

utilize a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilize a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, and wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for said first macroblock, the second QP value is less than the first QP value so that said at least one of the U and V~~

~~color channels has greater quantization resolution than the Y luminance channel;~~

in response to selecting achieving higher compression,

utilize the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilize the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for said first macroblock, the second QP value is greater than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel;~~

apply the first and second QP values; and

compress the color video image, after application of the first and second QP values, to a compressed output image.

44. (Previously Presented) The computer program of claim 43, further including instructions for causing a computer to decompress the compressed output image using the first and second QP values to obtain an uncompressed video image.

45. (Withdrawn) A computer program, stored on a computer-readable medium, for improving the coding efficiency for a color space representation of a video image originally represented as linear RGB pixel values in a video image compression system, the computer program comprising instructions for causing a computer to transform the linear RGB pixel values of the video image to a logarithmic representation of luminance and chroma channel information.

46. (Withdrawn) The computer program of claim 45, wherein the instructions for causing the computer to transform include instructions for causing the computer to apply the following equations to obtain a YUV logarithmic representation of the video image:

$$Ylog = Log (Wr * R + Wg * G + Wb * B)$$

$$U \text{ chroma channel} = Log(R) - Ylog$$

$$V \text{ chroma channel} = Log(B) - Ylog$$

where Wr, Wg, and Wb are linear weightings for red, green, and blue components of luminance of the video image.

47. (Withdrawn) The computer program of claim 46, further including instructions for causing the computer to reduce the resolution of the U and V chroma channels of the YUV logarithmic representation.

48. (Withdrawn) The computer program of claim 46, further including instructions for causing the computer to compress the YUV logarithmic representation of the video image to a compressed video image.

49. (Withdrawn) The computer program of claim 48, further including instructions for causing a decompression computer to decompress the compressed video image to a restored YUV logarithmic representation of the video image.

50. (Withdrawn) The computer program of claim 49, further including instructions for causing the decompression computer to transform restored YUV logarithmic representation of the video image to linear RGB pixel values.

51. (Withdrawn) The computer program of claim 50, wherein the instructions for causing the computer to transform includes instructions for causing the computer to apply the following equations to obtain the linear RGB pixel values:

R= anti-log(Y + U)

B= anti-log(Y + V)

G=(anti-log(Y) - Wr * R - Wb * B) / Wg.

52. (Withdrawn) A computer program, stored on a computer-readable medium, for improving the video characteristics of a color video image in a video compression system, the computer program comprising instructions for causing a computer to:

(a) select a set of image channels to represent the color video image, including a luminance channel and n chroma channels, where n is at least three; and

(b) compress the luminance channel and the n additional chroma channels to a compressed video image.

53. (Withdrawn) The computer program of claim 52, wherein at least one chroma channel represents non-visible wavelengths.

54. (Withdrawn) The computer program of claim 52, wherein the luminance channel is the image channel having the highest dynamic range and resolution.

55. (Withdrawn) The computer program of claim 52, further including instructions for causing a computer to code each chroma channel independently from each other channel.

56. (Withdrawn) The computer program of claim 52, further including instructions for causing a computer to code each chroma channel differentially with respect to a selected other channel.

57. (Withdrawn) The computer program of claim 52, further including instructions for causing a computer to reduce the resolution of at least one chroma channel.

58. (Withdrawn) The computer program of claim 52, further including instructions for causing a computer to apply a quantization parameter (QP) value to at least one chroma channel biased with respect to a QP value applied to the luminance channel.

59. (Withdrawn) A system for compressing image chroma information of a color video image a video image compression system, including:

(a) means for selecting a resolution for a red color component of the color video image that is higher than the resolution for a blue color component of the color video image; and

(b) means for applying the selected resolution to compress the color video image.

60. (Withdrawn) A system for compressing image chroma information of a color video image in a video image compression system, including means for:

(a) downfiltering a blue color component of the color video image to a processed blue color component having a first resolution along at least one of the horizontal and vertical image axes of the color video image; and

(b) filtering a red color component of the color video image to a processed red color component having a second resolution higher than the first resolution.

61. (Withdrawn) The system of claim 60, wherein the second resolution is in the range from 0.5 to 1.0 of the full

resolution of the red color component along at least one of the horizontal and vertical image axes of the color video image.

62. (Withdrawn) The system of claim 60, further including means for compressing at least the processed blue color and red color components to a compressed output image.

63. (Withdrawn) The system of claim 62, further including means for decompressing the compressed output image to obtain uncompressed processed blue and red color components.

64. (Withdrawn) The system of claim 63, further including means for upsize filtering the processed blue and red color components to the full resolution of the color video image.

65. (Withdrawn) The system of claims 59 or 60, wherein the video image compression system is a motion-compensated video image compression system.

66. (Currently Amended) A system for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, utilizing a variable quantization step size

and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, including:

means for utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock;

means for utilizing a second QP value for ~~all hues of~~ at least one of the U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~and wherein the second QP value for said first macroblock is less than the first QP value so that all hues of said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;~~ and

means for applying ~~selected~~ the first and second QP values during compression of the color video image.

67. (Currently Amended) A system for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters

during compression, utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, including:

means for utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock;

means for utilizing a second QP value for at least one of the U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, and wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock, ~~wherein the second QP value for said first macroblock is less than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock,~~ and

wherein for said relationship, the second QP value is determined by applying a bias value to the first QP value; and

means for applying ~~selected~~ the first and second QP values during compression of the color video image.

68. (Currently Amended) A system for reducing chroma noise during compression of a color video image in a YUV video image compression system using macroblocks and quantization parameters during compression, utilizing a variable quantization step size and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, including:

means for utilizing a first QP value for a Y luminance channel of the color video image for a first macroblock;

means for utilizing a second QP value for at least one of the U and V color channels of the color video image for said first macroblock, wherein said second QP value is dependent only upon a relationship to the first QP value, and wherein the relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~and wherein the second QP value for said first macroblock is less than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;~~

means for applying ~~selected~~ the first and second QP values during compression of the color video image;

~~means for applying the first and second QP values;~~ and

means for compressing the color video image, after application of the first and second QP values, to a compressed output image.

69. (Original) The system of claim 68, further including means for decompressing the compressed output image using the first and second QP values to obtain an uncompressed video image.

70. (Currently Amended) A YUV video image compression system configured to utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, the system including:

means for selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

means for, in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, and wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for all hues of said first macroblock, the second QP value is less than the first QP value so that all hues of said at least one of the U and V color channels has greater quantization resolution than the Y luminance channel;~~ and

means for, in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a

property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock;~~wherein for all hues of said first macroblock, the second QP value is greater than the first QP value so that all hues of said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel;~~ and

means for applying ~~selected~~ the first and second QP values during compression of the color video image.

71. (Currently Amended) A YUV video image compression system configured to utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, the system including:

means for selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

means for, in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock;~~wherein for said first macroblock, the second QP value is less than the first QP value so that said at least one of the U and V color channels has greater quantization resolution than the Y luminance channel, and wherein the second QP value is determined by applying a bias value to the first QP value;~~ and

means for, in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein for said first macroblock,

wherein said second QP value is dependent only upon a second relationship to the first QP value, wherein the second relationship comprises a property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock, ~~the second QP value is greater than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel,~~ and

wherein for at least one of said relationships, the second QP value is determined by applying a bias value to the first QP value; and

means for applying ~~selected~~ the first and second QP values during compression of the color video image.

72. (Currently Amended) A YUV video image compression system configured to utilize macroblocks and quantization parameters during compression, a variable quantization step size, and a quantization parameter (QP) to represent a size of a step where an increase in QP corresponds to a larger quantization step size, the system including:

means for selecting at least one of reducing chroma noise during compression of a color video image and achieving higher compression during compression of the color video image;

means for, in response to selecting reducing chroma noise,

utilizing a first QP value for a Y luminance channel of a first macroblock of the color video image, and

utilizing a second QP value for at least one of a U color channel and a V color channel of said first macroblock of the color video image, wherein said second QP value is dependent only upon a first relationship to the first QP value, and wherein the first relationship comprises a property that the second QP value is lower than the first QP value so that said at least one of the U and V color channels has finer quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for said first macroblock, the second QP value is less than the first QP value so that said at least one of the U and V color channels has greater quantization resolution than the Y luminance channel;~~

means for, in response to selecting achieving higher compression,

utilizing the first QP value for the Y luminance channel of said first macroblock of the color video image, and

utilizing the second QP value for at least one of the U and V color channels of said first macroblock of the color video image, wherein said second QP value is dependent only upon a second relationship to the first QP value, and wherein the second relationship comprises a property that the second QP value is higher than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel for said first macroblock; ~~wherein for said first macroblock, the second QP value is greater than the first QP value so that said at least one of the U and V color channels has coarser quantization resolution than the Y luminance channel;~~

means for applying ~~selected~~ the first and second QP values during compression of the color video image;

~~means for applying the first and second QP values;~~ and

means for compressing the color video image, after application of the first and second QP values, to a compressed output image.

73. (Original) The system of claim 72, further including means for decompressing the compressed output image using the first and second QP values to obtain an uncompressed video image.

74. (Withdrawn) A system for improving the coding efficiency for a color space representation of a video image originally represented as linear RGB pixel values in a video image compression system, including:

(a) means for inputting linear RGB pixel values of a video image; and

(b) means for transforming the linear RGB pixel values of the video image to a logarithmic representation of luminance and chroma channel information.

75. (Withdrawn) The system of claim 74, wherein transforming includes applying the following equations to obtain a YUV logarithmic representation of the video image:

$$Ylog = Log (Wr * R + Wg * G + Wb * B)$$

$$U \text{ chroma channel} = Log(R) - Ylog$$

$$V \text{ chroma channel} = Log(B) - Ylog$$

where Wr, Wg, and Wb are linear weightings for red, green, and blue components of luminance of the video image.

76. (Withdrawn) The system of claim 75, further including means for reducing the resolution of the U and V chroma channels of the YUV logarithmic representation.

77. (Withdrawn) The system of claim 75, further including means for compressing the YUV logarithmic representation of the video image to a compressed video image.

78. (Withdrawn) The system of claim 77, further including means for decompressing the compressed video image to a restored YUV logarithmic representation of the video image.

79. (Withdrawn) The system of claim 78, further including means for transforming restored YUV logarithmic representation of the video image to linear RGB pixel values.

80. (Withdrawn) The system of claim 79, wherein transforming includes applying the following equations to obtain the linear RGB pixel values:

R= anti-log(Y + U)

B= anti-log(Y + V)

G=(anti-log(Y) - Wr * R - Wb * B) / Wg.

81. (Withdrawn) A system for improving the video characteristics of a color video image in a video compression system, including means for:

(a) selecting a set of image channels to represent the color video image, including a luminance channel and n chroma channels, where n is at least three; and

(b) compressing the luminance channel and the n additional chroma channels to a compressed video image.

82. (Withdrawn) The system of claim 81, wherein at least one chroma channel represents non-visible wavelengths.

83. (Withdrawn) The system of claim 81, wherein the luminance channel is the image channel having the highest dynamic range and resolution.

84. (Withdrawn) The system of claim 81, further including means for coding each chroma channel independently from each other channel.

85. (Withdrawn) The system of claim 81, further including means for coding each chroma channel differentially with respect to a selected other channel.

86. (Withdrawn) The system of claim 81, further including means for reducing the resolution of at least one chroma channel.

87. (Withdrawn) The system of claim 81, further including means for applying a quantization parameter (QP) value to at least one chroma channel biased with respect to a QP value applied to the luminance channel.

88. (New) The method of claim 8 or 12, wherein the relationship is defined in a lookup table comprising a plurality of QP values.

89. (New) The computer program of claim 37 or 41, wherein the relationship is defined in a lookup table comprising a plurality of QP values.

90. (New) The system of claim 66 or 70, wherein the relationship is defined in a lookup table comprising a plurality of QP values.